A DATABASE SYSTEM AND A METHOD OF INTERROGATING THE SAME

Technical Field

The present invention relates generally to a data base system and a method of interrogating the same, and more particularly to a database system comprising a database with geographically structured information and a method of interrogating said geographically structured information.

Description of the Prior Art

There are a number of electronic databases, such as electronic phone books and product databases etc., available for access via the Internet. The accessibility of the different databases are also independent of from where on the earth the user and his terminal is located when the user interrogates the databases.

If a user wants to find a suitable supplier of a certain product (such an article or a service), he can access one or more of the huge number of electronic telephone books provided on almost the same number of languages on the Internet. Electronic phone books are information systems based on electronic databases, in which address information is stored for a large number of companies and/or private persons. Normally, the address information is comprised by information regarding personal or company name, street address, postal address, telephone number, telefax number, electronic mail address (email address), etc. Another or probably better alternative for the user is to access one or more of the great number of Internet based electronic product databases, which may be provided by governmental or private suppliers.

EP-A2-0 866 408 discloses an information system, that intends to simplify the linking of buyers and sellers of a certain product. The information system comprises a

database with an address register for storing address information, such as name, address, telephone and telefax numbers, for legal and/or natural persons, and provides structured access to the address information. Further, the database comprises a product register with information relating to articles and services, control information, by means of which records in the address register are linked to records in the product register and link information, by means of which records in the address register and/or records in the product register are linked to information sources on the Internet.

Hence, this prior art system streamline the way a user can find one supplier or a plurality of suppliers, which may provide an article or service requested by the user. However, this and other prior art Internet based product databases suffer from a geographical interrogation problem. The user interface of each database, i.e the means for creation of queries by means of which a user interrogates the database to obtain reports etc., is usually provided in one or a limited number of optional languages. When the user browses the Internet and then enters a database the user interface is usually provided in one language and the user might be able to select another language from a limited number of languages. This leads to problems for users with only some or little knowledge of languages.

Another interrelated problem with prior art Internet product databases is that the products offered are available for buyers in a limited geographical area, such as one or a group of countries or another limited geographical area. The database information is, however, provided to everybody entering the database independent of whether the product is available for sale in the country, in which he is resident or has his place of business.

Hence, a user accessing prior art databases according to the above is provided with superfluous information.

Summary of the Invention

The object of the present invention is to improve the means of which a user interrogates a database in order to provide an efficient filtering of information requested from the database.

This object is achieved by a database system and method of interrogating the same according to the appended patent claims.

Brief Description of the Drawings

In order to explain the invention in more detail and the advantages and features of the invention a preferred embodiment will be described in detail below, reference being made to the accompanying drawings, in which

FIG 1 is a schematic view of a computer-based information system, in which the invention may be applied,

FIG 2 schematically illustrates a database contained in a preferred embodiment of the invention, and

FIGs 3 and 4 are screen printouts for exemplifying a user interface for the database system according to the invention.

Detailed Disclosure of the Invention

FIG 1 schematically illustrates an information system including a database system according to an embodiment of the invention. A processing unit 18, which preferably is a personal computer known per se, is connected to a keyboard 10, a mouse 12, a screen 14, a printer 16, a modem or network connection 17 as well as telecommunications equipment 15, 19, for instance a telephone and a telefax machine. Furthermore, the processing unit 18 is operatively

connected to a database 20, which will be described in more detail below.

The screen 14 and the printer 16 function as presentation devices for a user of the information system, while the keyboard 10 and the mouse 12 function as input devices. The processing unit or computer 18 is provided with a suitable operating system, such as Microsoft® Windows® XP or any other operating system available on the market.

By using the modem 17 the user may establish contact between the computer 18 and other computers or computer systems via the public telephone network. Furthermore, the user may transmit and receive telefacsimile messages by means of the telefacsimile equipment 19 known per se and carry out telephone conversations by means of the computer telephone 15. It has to be pointed out that this computer system only serves as an example and that the system may be provided with other components known per se than those shown herein. Furthermore, the computer system does not have to be provided with all the devices and units described above for providing access for the user to the information system described below.

The database 20 will now be described in more detail, reference being made particularly to FIG 2. The database comprises an address register 30, the contents and structure of which essentially correspond to previously known address registers. The address register 30 has a record structure 32, which comprises different fields. In this embodiment of the invention the record structure comprises a geographical information field 33 for storage of geographical information of or associated with each supplier. In this embodiment of the invention the geographical information represents the geographical area within which a user has to be located to be able to or alternatively to be allowed to access information provided by a particular supplier. For example, different suppliers

offer products only for specific market areas. Suppliers can also be restricted to particular geographical areas of users accessing their information due to different levels of payment to the database operator.

In this embodiment of the invention the geographical information is a part of the Internet Protocol (IP) address space and is defined by an interval of IP addresses stored in the geographical information field 33 of each supplier. Hence, each interval covers more or less of the Internet Protocol (IP) address space, for example the whole world, one or more continents, one or more regions such as Scandinavia, one or more countries or even smaller areas.

An IP-address is a unique identification for a computer or device on a TCP/IP network, such as the Internet. Each IP address comprises 4 octets of a total of 32 bits divided in a network address and a host address. Networks using the TCP/IP protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 168.192.10.240 could be an IP address.

Further, the record structure comprises the following general fields, among others:

- Name (company name and first name/family name for natural persons, respectively),
- Address information (street address, postal address, visiting address, etc),
- Telephone number, telefax number, etc (such as telex),
- Electronic mail address, and
- A keyfield for each record (referred to as Address-ID in the drawing), which is used for uniquely identifying the respective address record 32.

Furthermore, the database 20 comprises a product register 40, the records 42 of which preferably comprise for instance the following fields:

- Product-ID (for unique identification of the product record 42),
- Product name,
- Product type, and
- Product specification.

The address register 30 is arranged to store telephone and address information for legal and/or natural persons (companies and private persons, respectively), which supply any kind of product. The product register 40 is arranged to store information regarding such products. In this context the term product relates in principle to any kind of article or service, which is available on an open market. The address register 30 as well as the product register 40 may be read by a database engine 100, which forms the nucleus of the database 20. Preferably, the database 20 may be realized as a relational database, wherein the address register 30 and the product register 40 are realized as one or several tables each. In this case the database engine 100 is arranged to read and write data from and into the tables of the database, for instance the address register 30 and the product register 40, by means of for instance SQL-statements.

According to a preferred embodiment of the invention the database 20 is furthermore provided with a supply register 50, the records 52 of which link records 32 in the address register 30 to records 42 in the product register 40 in the way described below. For each supplier being represented by a record 32 in the address register 30 one record 52 is stored in the supply register 50 for each product provided by the supplier and being represented by a product record 42. Preferably, the supply register 50 has a record structure 52 in the form of a group of fields, wherein the first field in each group is constituted by a product ID corresponding to the respective product record 42 in the product register 40, while the second field in

the group is constituted by an address ID corresponding to the address record 32 in the address register 30. In the example of Fig 2 the supplier "address-ID1" is noted as supplier of the products "product-ID1", "product-ID2" and "product-ID3". The supplier "address-ID2" is noted as supplier of the product "product-ID4", etc.

With further reference to Fig 1, the database 20 is preferably stored at a location physically separated from the user and the computer 18. For instance, the database 20 may be stored in a remote computer system 21, which is provided with hardware components and software applications to be made available to the user and the computer 18 through a local or global computer network, for instance the Internet 22. Additionally, the user may connect to such a remote computer system through the modem connection 17, via a network connection, or the like.

The computer 18 is provided with a web browser, such as Netscape Navigator or Microsoft Internet Explorer, to locate and display web pages. The remote computer system 21 is also provided with suitable software for accessing the combined product and address database 20 from the computer 18. This software is preferably in the form of a window-based user interface search program, the layout of which may for instance be as shown in FIGs 3 and 4. The search program is accessible from a web page provided by the computer system 21 and enables the user of the computer 18 to search for product information as well as address information. The search program has a software application adapted to identify the geographical location of the computer used by the user when he accesses the database 20.

If the user knows which product he requests but does not know the company or companies, which may provide this product, he will enter the name of the requested product in the search program. This is illustrated in FIG 3, where the user searches for all products starting with the letters

"car". The search program in the computer system 21 calls the database engine 100, which will put together all companies providing such products, where the geographical information of the suppliers covers the identified geographical location of the user, from the product register 40, the supply register 50, and the address register 30. A list of these companies, that not only offer the requested product but also are able to provide or deliver the product to the geographical area of the user, are presented on the screen 14. The user may then select any of the companies in the list of companies, wherein more detailed information is presented to the user according to FIG 4. Preferably company information is presented by way of company name, address information, telephone number, telefax number, electronic mail address, etc. Additionally, a free-text based company profile may be shown to the user. Furthermore, a list of the products offered by the supplier in question is presented, i.e. other products provided by the company and contained in the product register 40.

Naturally, the user may use the information system and the database 20 for searching in a known way for address information relating to a company by for instance entering parts of the company name or parts of its address. The result of such a search may be presented according to FIG 4.

In other embodiments of the invention the geographical information can have other formats for dividing the geographical area, within which a user has to be located to be able to or alternatively to be allowed to access information provided by a particular supplier.

In a second embodiment of the invention the format is defined as, but is not limited to, a text based format or other corresponding representation, wherein the geographical information stored in each supplier record explicitly expresses the area. The whole world, a name of

one or more continents, one or more regions such as Scandinavia, one or more countries or even smaller areas, are examples of possible geographical information. The database system is adapted to ask the user a question about his/her geographical location, the answer of which is entered into the database system through the user interface of the user terminal or computer. Information representing an association between the user and his geographical location is stored in the database. Next time the same user accesses the database his geographical location is identified by the stored information representing an association between the user and his location. Access to the information in the database is provided according to the same principals as for the first embodiment described above.

In an alternative embodiment, the information about geographical location is attached as a cookie to the user. The database system is adapted to read the cookie for identification of the location and then provide limited access to the database as described above.

In an alternative embodiment of the invention, the database 20 also stores information associating languages used in different countries or regions with different IP address sub-spaces. Hence, in this alternative embodiment the search program is further adapted to automatically change the display language of the user interface to a language used in the area of the identified geographical location, immediately when the user enters the web page.

The database 20 may be physically stored on a storage device connected to the computer system 21, for instance a permanent storage medium such as a hard disc or a CDROM-disc. Also other kinds of storage media are, however, equally possible.

According to a further development of the information system the database 20 is additionally provided with digi-

tal information 60 in the form of photographs or images representing or illustrating any product present in the product register 40 or alternatively any company present in the address register 30. Furthermore, the database 20 is provided with digital sound files 70, which for instance may contain music sequences or spoken sequences for presenting a product or a company. A register 80 contains moving pictures, such as video film sequences, which in a corresponding way aim at presenting or marketing a product or a company in the information system. Finally, the database 20 is provided with a register 90 containing links to information sources on the Internet. These links are preferably in the form of URL-addresses, i.e. addresses according to the format "http://www.my_domain.com". All these registers 60, 70, 80 and 90 are connected to the database engine 100, which therefore may retrieve information from the registers and transmit the information to the search program for presentation on the screen 14. The product register 40 and/or the address register 30 may contain field keys, which uniquely link a product record 42 or an address record 32 to any record in the registers 60, 70, 80 or 90. Particularly as regards the Internet register 90, the search program may be arranged to establish automatic contact, via the Internet, with the Internet-based information source in question.

According to a further development of the information system the database 20 is also provided with a separate database 110, which is arranged to be stored locally in the computer 18 and which comprises at least an address register similar to the address register 30. The database 110 may be used by the user for storing personal address information relating to relatives, friends or other personal contacts.

Additionally, the information system may be provided with a dialling function, so that the user may establish

telephone contact with the desired company or private person through the search program in the computer 18 and the computer telephone 15 connected to the computer 18. This option may for instance be used during the search for making contact with the required supplier for obtaining further product information or for ordering the product. The information system may also be provided with a function for printing out order forms, which may be sent as an electronic mail via the Internet to the supplier or may be sent as a telefacsimile message through the equipment 19. The information system may furthermore have a function for printing out for instance the search results or address labels.

Although embodiments of the method and apparatus of the invention has been illustrated in the accompanying drawings and described in the foregoing detailed description, the disclosure is illustrative only and changes, modifications and substitutions may be made without departing from the scope of the invention as set forth and defined by the following claims.